Report Information
from Dialog DataStar
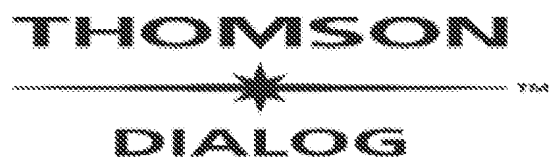
THOMSON

DIALOG

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Color images' segmentation using scale space filter and Markov random field.

Dialog eLinks

Full text options USPTO Full Text Retrieval Options

Accession number & update

0004329058 20070101.

Source

Pattern Recognition, {Pattern–Recognit–UK}, Oct. 1992, vol. 25, no. 10, p. 1217–29, 18 refs, CODEN: PTNRA8, ISSN: 0031–3203, UK.

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Abstract

A hybrid method is presented that combines the scale space **filter** (SSF) and Markov random field (MRF) for color image **segmentation.** The fundamental idea of the SSF is to use the convolution of Gaussian functions and an image–histogram to generate a scale space image and then find the proper interval bounded by the local extrema of the derivatives. The Gaussian function is with zero mean and varied standard deviation. Using the SSF the different scaled histogram is separated into intervals corresponding to peaks and valleys. The MRF makes use of the property that each pixel in an image has some relationship with other pixels. The basic construction of an MRF is a joint probability given the original data. The original data is the image that is obtained from the source and the result is called the label image. Because the MRF needs a **number** of **segments** before it converges to the global minimum, the SSF is exploited to do coarse **segmentation** and then MRF is used to do fine **segmentation** of the images. Basically, the former is histogram–based **segmentation,** whereas the latter is neighborhood–based **segmentation.**

Descriptors

IMAGE–SEGMENTATION; MARKOV–PROCESSES; SIMULATED–ANNEALING; SPATIAL–FILTERS.

Classification codes

B6140C Optical–information–image–and–video–signal–processing*;
B0240Z Other–topics–in–statistics;
B0260 Optimisation–techniques;
C1250 Pattern–recognition*;
C1140Z Other–topics–in–statistics;
C1180 Optimisation–techniques.

Keywords

spatial–filters; simulated–annealing; Gibbs–sampling; scale–space–filter; Markov–random–field; color–image–segmentation; convolution; Gaussian–functions; image–histogram; coarse–segmentation; fine–segmentation; neighborhood–based–segmentation.

Treatment codes

T Theoretical–or–mathematical.

Language

English.

Publication type

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Conference information
Intelligent Robots and Computer Vision X: Algorithms and Techniques,
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Source
Proceedings of the SPIE – The International Society for Optical Engineering,
{Proc–SPIE–Int–Soc–Opt–Eng–USA}, 1992, vol. 1607, p. 358–68, 11 refs, CODEN: PSISDG, ISSN:
0277–786X, USA.
Author(s)
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Author affiliation
Tai–Yuen Cheng, Chung–Lin Huang, Dept. of Electr. Eng., Nat. Tsing–Hua Univ., Hsin–Chu, Taiwan.
Abstract
The paper presents a hybrid method that combines the scale space **filter** (SSF) and Markov random field
(MRF) for color image **segmentation.** Using the scale space **filter,** the authors separate the different
scaled histogram to intervals corresponding to peaks and valleys. The basic construction of MRF is a joint
probability given the original data. The original data is the image that the authors obtained from the
source and the result is called the label image. Because the MRF needs the **number** of **segments** before
it converges to the global minimum, they exploit the scale space **filter** to do coarse **segmentation** and
then use MRF to do fine **segmentation** of the images. Finally, they compare the experimental results
obtained from using SSF only, or combined with MRF using iterated conditional mode (ICM), and Gibbs
sampling.
Descriptors
COLOUR; MARKOV–PROCESSES; PATTERN–RECOGNITION; PICTURE–PROCESSING.
Classification codes
B6140C Optical–information–image–and–video–signal–processing*;
C1250 Pattern–recognition*;
C1260 Information–theory.
Keywords
scale–space–filter; Markov–random–field; **color–**image–segmentation;
joint–probability; **coarse–**segmentation; **fine–**segmentation; iterated–
conditional–mode; Gibbs–sampling.
Treatment codes
P Practical.
Language
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Publication type
Conference–paper; Journal–paper.
Availability
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Search Strategy

No.	Database	Search term	Info added since	Results
1	INZZ	segmentation	unrestricted	49376
2	INZZ	size NEAR segment$1 OR (number OR quantity) NEAR segment$1	unrestricted	3279
3	INZZ	blur$4 OR smooth$4 OR filter$3	unrestricted	440313
4	INZZ	1 AND 2 AND 3	unrestricted	52

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